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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,967	09/01/2006	Tommy Mullane	05-864	1659

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EXAMINER	
NIU, XINNING	

ART UNIT	PAPER NUMBER
2828	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,967	MULLANE ET AL.	
	Examiner	Art Unit	
	XNNING NIU	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-18,20,21 and 26-28* is/are pending in the application.

4a) Of the above claim(s) *27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,14,18,26 and 28* is/are rejected.

7)☒ Claim(s) *7-13,15-17,20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Newly submitted claim 27 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the method of claim 1 can be performed using an apparatus that does not include a processor, data storage or program code.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 27 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant's claimed limitation of "selecting continuous regions with a first frequency overlap that have a resonance peak in the wavelength response from their beginnings and ends" is confusing to the examiner.

Specifically, the examiner cannot determine whether "wavelength response" refers to the laser or to the etalon.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-4, 14, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over B. Glance et al., "One-THz Digital Random Access High Resolution Optical Frequency Synthesizer Providing Cold-Start Operation From A Frequency Reference," Communications: Connecting the Future. San Diego, Dec. 2 - 5, 1990, Proceedings of the Global Telecommunications Conference and Exhibition, New York, IEEE, Vol. 2, 2 December 1990 (1990-12-0Z), pp. 766-767. in view of Li et al. (2003/0007522).

7. Regarding claim 1, Glance et al. disclose: providing a wavelength reference having at least first and second resonance peaks (the Fabry-Perot resonator has more than one resonance peaks) (Figure 1, page 0766). Sweeping the laser across a pre-determined wavelength range of the wavelength reference; the laser is tuned across the entire tuning range of the laser (page 0766). Defining within the laser sweep, one or more regions of continuous tuning operation of the laser, each of the regions corresponding to a response of the laser between adjacent resonance peaks of the wavelength reference; the laser is tuned over a 1Thz tuning range in steps of 500Mhz which is continuously tuned (Figure 2, Pages 0766-0767). Glance et al. do not disclose: wherein the regions of continuing tuning operation of the laser are defined by: calibrating the laser so as to provide a range of currents with no mode jumps; selecting continuous regions with a first frequency overlap that have a resonance peak in the wavelength response from their beginnings and ends; and setting the currents while sweeping through those wavelengths so as to provide responsibly transitioning wavelength sweep. Li et al. disclose: mode hop free tuning is important in order to avoid transmission errors and for tuning to al the wavelengths in a particular wavelength range ([0004] [0005]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by choosing a range of current with no mode jumps in order to avoid transmission errors when the laser is used for communication. When the laser is biased with a range of currents with no mode jumps the wavelength output will have a smooth transition due to no discontinuities in the output.

8. Regarding claim 2, Glance et al. disclose: continuous tuning regions next to one another (Figure 2, Pages 0766-0767).

9. Regarding claim 3, Glance et al. disclose: one or more regions of continuous tuning operation re displaced from one another across the pre-determined wavelength range (Figure 2, page 0766, right column). In figure 2, continuous tuning region 1 and 3 are displaced from one another across the pre-determined wavelength range.

10. Regarding claim 4, Glance et al. disclose: two or more regions placed next to each other to form a usable tuning data set (Figure 2, page 0766, right column).

11. Regarding claim 14, Glance et al. disclose: wavelength reference is provided by a Fabry-Perot etalon (Figure 1, Page 0766).

12. Regarding claim 26, Glance et al. disclose: providing a wavelength reference having at least first and second resonance peaks; the Fabry-Perot resonator has more than one resonance peaks (Figure 1, page 0766). Sweeping the laser across a pre-determined wavelength range of the wavelength reference; the laser is tuned across the entire tuning range of the laser (page 0766). Defining within the laser sweep, one or more regions of continuous tuning operation of the laser, each of the regions corresponding to a response of the laser between adjacent resonance peaks of the

wavelength reference; the laser is tuned over a 1Thz tuning range in steps of 500Mhz which is continuously tuned (Figure 2, Pages 0766-0767). Glance et al. do not disclose: wherein the regions of continuing tuning operation of the laser are defined by: calibrating the laser so as to provide a range of currents with no mode jumps; selecting continuous regions with a first frequency overlap that have a resonance peak in the wavelength response from their beginnings and ends; and setting the currents while sweeping through those wavelengths so as to provide responsibly transitioning wavelength sweep. Li et al. disclose: mode hop free tuning is important in order to avoid transmission errors and for tuning to al the wavelengths in a particular wavelength range ([0004] [0005]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by choosing a range of current with no mode jumps in order to avoid transmission errors when the laser is used for communication. When the laser is biased with a range of currents with no mode jumps the wavelength output will have a smooth transition due to no discontinuities in the output.

13. Claims 5, 18, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over B. Glance et al., "One-THz Digital Random Access High Resolution Optical Frequency Synthesizer Providing Cold-Start Operation From A Frequency Reference," Communications: Connecting the Future. San Diego, Dec. 2 - 5, 1990, Proceedings of the Global Telecommunications Conference and Exhibition, New York, IEEE, Vol. 2, 2

December 1990 (1990-12-0Z), pp. 766-767. in view of Li et al. (2003/0007522) and Ackerman et al. (6,535,532).

14. Regarding claim 5, Glance et al. disclose: a computer used to control a tuning apparatus which have continuous tuning over a first frequency region with frequency overlap on either side with the previous and next continuous tuning regions (page 0766, right column); computer programmed to select a continuous region when a resonance peak is detected in the frequency region and jumping to the next continuous tuning region when the next resonance peak in found (page 0766, right column); repeating the steps until a sufficient range of wavelength has been swept (page 0766, right column). Glance et al. do not disclose: the control signal being turned on and off to denote a continuous region, lookup table used to store various values. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by turning on and off a control signal to select the beginning and end points of a continuous region in order to keep track and store the values to memory. Ackerman et al. disclose: laser control system using lookup tables to store values for laser operation (claim 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by using a lookup table in order to store laser tuning values.

15. Regarding claim 18, Glance et al. disclose: a computer used to control a tuning apparatus which have continuous tuning over a first frequency region with frequency

overlap on either side with the previous and next continuous tuning regions (page 0766, right column); computer programmed to select a continuous region when a resonance peak is detected in the frequency region and jumping to the next continuous tuning region when the next resonance peak in found (page 0766, right column); repeating the steps until a sufficient range of wavelength has been swept (page 0766, right column) gain of the receiver is controlled dynamically from continuous tuning region to continuous tuning region (detecting the synthesized optical signal by scanning the Fabry-Perot). Glance et al. do not disclose: the control signal being turned on and off to denote a continuous region,; lookup table used to store various values. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by turning on and off a control signal to select the beginning and end points of a continuous region in order to keep track and store the values to memory. Ackerman et al. disclose: laser control system using lookup tables to store values for laser operation (claim 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by using a lookup table in order to store laser tuning values.

16. Regarding claim 28, Glance et al. disclose: providing a wavelength reference having at least first and second resonance peaks (the Fabry-Perot resonator has more than one resonance peaks) (Figure 1, page 0766). Sweeping the laser across a pre-determined wavelength range of the wavelength reference; the laser is tuned across the entire tuning range of the laser (page 0766). Defining within the laser sweep, one or

more regions of continuous tuning operation of the laser, each of the regions corresponding to a response of the laser between adjacent resonance peaks of the wavelength reference; the laser is tuned over a 1Thz tuning range in steps of 500Mhz which is continuously tuned (Figure 2, Pages 0766-0767). two or more regions placed next to each other to form a usable tuning data set (Figure 2, page 0766, right column); a computer used to control a tuning apparatus which have continuous tuning over a first frequency region with frequency overlap on either side with the previous and next continuous tuning regions (page 0766, right column); computer programmed to select a continuous region when a resonance peak is detected in the frequency region and jumping to the next continuous tuning region when the next resonance peak in found (page 0766, right column); repeating the steps until a sufficient range of wavelength has been swept (page 0766, right column) gain of the receiver is controlled dynamically from continuous tuning region to continuous tuning region (detecting the synthesized optical signal by scanning the Fabry-Perot). Glance et al. do not disclose: the control signal being turned on and off to denote a continuous region,; lookup table used to store various values. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Glance et al. by turning on and off a control signal to select the beginning and end points of a continuous region in order to keep track and store the values to memory. Ackerman et al. disclose: laser control system using lookup tables to store values for laser operation (claim 8). It would have been obvious to one having ordinary skill in the art at the time the invention was

made to modify the invention of Glance et al. by using a lookup table in order to store laser tuning values.

Allowable Subject Matter

17. Claims 7-13,15-17, 20, 21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

18. Applicant's arguments filed 04/08/2008 have been fully considered but they are not persuasive. Regarding the applicant's arguments Glance et al. disclose: continuous tuning regions that overlap each other (Figure 2, page 0766) and resonance peaks that denote the beginning and end of each region (successive resonances of a Fabry-Perot resonator denotes the beginning and end of each region). The laser is tuned for each continuous tuning region (Figure 2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XNNING NIU whose telephone number is (571)270-1437. The examiner can normally be reached on M-T, 7:30-5:00 EST, Alternate Fridays 7:30-4:00 ES.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xinning(Tom) Niu/
Examiner, Art Unit 2828
07/15/2008

/Minsun Harvey/
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